SYPHILITIC ARTHRITIS.*

By LEONARD W. ELY, M. D., San Francisco.

Morbid processes in joints are comparatively simple in their essentials. While there have been extremely involved and complicated classifications made at various times, of bone and joint inflammation, yet the fundamentals of these classifications are comparatively simple. In order that you may know how to apply what I am saying to the ordinary types of disease, I would call your attention to the fact that the type of inflammation which we are going to speak about mostly tonight has an analogue, known by various authors as atrophic arthritis, as infectious arthritis, as proliferative arthritis, and as rheumatoid arthritis.

If the marrow and the synovial membrane be exposed to an irritation, they respond in a certain way. If, for instance, we have a tubercle in the marrow of the end of the bone, spreading and involving more or less of the marrow, we will get an atrophy of the bone. If the disease breaks through and involves the joint, we will have a proliferation of the synovial membrane. Instead of forming a comparatively flat, smooth membrane, it will be thrown into folds, and what is known as villous arthritis or synovitis will result. If the gonococcus be the invading organism, practically the same thing takes place. Typhoid and pneumococcus joints have the same pathological fundamentals, and syphilis precisely the same. Thus, a syphilitic inflammation in the end of the bone causes a rarefying osteitis, an atrophy of the bone trabecula, and a villous condition of the synovial membrane. As a result of this, the synovial membrane will encroach upon the cartilage from its side, displace the cartilage, tend to spread out at its circumference, and also over its surface, while at the same time the disease in the marrow not only will cause a rarefying of the bone trabeculae but will also shut off the nutrition of the cartilage and perforate it from its under surface.

Cartilage, when it is diseased, is no longer immune to morbid processes, but is perforated by these syphilitic granulations in the marrow. There is nothing radically different in any of these diseases, in the reaction of the bone, of the bone marrow, of the synovial membrane. They all cause practically the same changes. Now, pathological identity means identity of symptomatology and physical signs. Practically, the symptomatology of all these diseases is the same. In a general way, each has its peculiar points, but there is nothing absolutely characteristic about the course of any one of them, nor is there anything characteristic about the symptomatology or of the physical signs. Hence, it follows that tuberculous arthritis cannot be differentiated from any other member of the group by the clinical symptoms.

I was taught in my younger days that syphilitic arthritis was so rare in children that it could practically be disregarded as far as clinical work was concerned. On the contrary, the more you look for it, the oftener you find it. If a joint be inflamed for any reason, the first, the peculiar characteristic of the inflammation, as with the inflammation of any other organ of the body, is a disturbance in function. If an inflammation exists in the kidney, the kidney function suffers. If an inflammation be present in the heart or in the lungs, the same thing happens. If an inflammation, no matter what its cause, be in the joint, motion is usually the first thing to suffer.

Tuberculosis starts in the epiphysis, not so often as syphilis, but very often; and either can start in the synovial membrane and later involve the marrow. Syphilis usually involves the shaft and rarely the ends of the bone. If the shaft and the end of the bone are both involved, the diagnosis of syphilis is probable. There is no known way of diagnosing syphilitic arthritis except, I believe, by the therapeutic test. If we know that the patient be syphilitic, we have a strong indication, but a tuberculous joint may exist in the syphilitic individual, as the syphilitic joint may exist in a tuberculous individual.

Given a case of a supposed syphilitic arthritis, the joint will usually be swollen. The swelling may be due to the thickening of the synovial membrane, to fluid in the joint, or to both. Muscular atrophy and muscular spasm may be present or absent. One joint may be involved or several joints. Various writers describe peculiar forms of the disease and speak about the synovitis of hereditary syphilis. Sometimes the disease does exist as a comparatively painless synovitis, but the marrow may be involved as well.

There are four frequent forms that the disease may present: One, synovitis; another, what is known as true arthritis—inflammation of the synovial membrane and of the bone end itself; another, the peculiar multiarticular form of arthritis which simulates that caused by the diplostreptococcus of Rosenow. Then there is a late form of the disease known as the Charcot joint.

Pain may be prominent, or it may be absent. The peculiar painless joint is suggestive of syphilitic synovitis. Tuberculosis usually has a good deal more pain than syphilis, but not always so. If only the synovial membrane be involved, tuberculosis may also be accompanied by very little pain. As a rule, the disease is slower and less destructive than is tuberculosis. If it has existed for a long time, if it has perhaps disappeared for a while and then returned, and if it is not painful, the indications are that it is not tuberculosis but syphilis. The diagnosis comes down as a rule to one of five or six morbid processes; the first, tuberculosis; the second, syphilis; the third, gonorrhea; the fourth, typhoid arthritis, which is extremely rare; the fifth, diplostreptococcus of Rosenow; and the sixth, trauma. In the X-ray of all these diseases, we may find practically nothing but a thickened synovial membrane; but as a rule, we will find an erosion of the cartilage, and a rarefaction of the bone. In lues, the process is apt to be on the joint side of the epiphyseal side; in tuberculosis, on the shaft side. Tuberculosis usually affects the synovial membrane and the marrow. Gonorrhea usually affects the periosteum and the synovial membrane, rarely the marrow.

* Read before the Alameda County Medical Association, January 18, 1916.

Lues, as a rule, affects the marrow and the periosteum, not so often the synovial membrane. The Wassermann test helps, but it is not conclusive.

The weak point in all our work on syphilitic bone and joint disease is that we are compelled practically to accept the diagnosis of lues when the disease disappears on the administration of antisyphilitic drugs. It is no proof. We know it, yet it is all the evidence we have at hand.

The good old rule never to operate upon one of these tuberculous joints until it has been proved nonsyphilitic by administration of antisyphilitic remedies is a very safe one. No one seems to be immune from this mistake. I stand here emphasizing this to-night, and I have no doubt that within two or three months I shall make the same mistake.

The only way to solve this problem is not by looking at one joint, but by looking at the patient as a whole—going over him from head to foot, thinking what the disease may be and making our diagnosis by exclusion.

The treatment of syphilitic arthritis is simple. If the Wassermann test is positive, use salvarsan followed by mercury and the iodids. If the Wassermann test is negative, and you are not very sure of your diagnosis and wish to be on the safe side, use mercury and the iodids, mercury especially. The iodids do not seem to have very much effect on these syphilitic joints. If the Wassermann test is negative and we are very suspicious of syphilis, then administer salvarsan followed by mercury. It is rather remarkable that very often these joints will improve on the administration of mercury for a while, and then will come to a standstill. A dose of salvarsan seems to hasten things. Then it is well to go back to mercury. Strange to say, immobilization has no effect upon them whatever.

It is almost diagnostic of tuberculosis that when the joint is put at rest the improvement starts in. Syphilis does not respond to immobilization, but on the contrary, often grows worse. Plaster of paris and braces do no good, not even as adjutants. It is interesting to see in some instances how an apparently hopelessly distorted joint with its architecture destroyed, will re-form under appropriate treatment.

Syphilis can affect fibrous tissue, red marrow and yellow marrow, or synovial membrane, whereas tuberculosis affects nothing but the lymphoid marrow and the synovial membrane. Syphilis does not have any distinct boundaries. You cannot say when a child, three or four years old, is brought to you for treatment, "This cannot be a syphilitic synovitis, because congenital syphilis in the child appears in such and such a week, and is steadily progressive or tends to recover, or what not." You cannot bound the disease or its appearance in the joint by artificial rules. There is no known way that you can tell syphilitic joint by appearances. Do not think that if an inflammation comes at a certain time, syphilis is barred out. It is never barred out. Syphilis is never out of the question. Do not always depend on your periosteal thickening. Look for it. If you get it, you are pretty sure; but if you do not get it, do not rule out syphilis.

As I said before, this all must be taken with a grain of salt. We cannot take a joint into a laboratory, and say it is or is not syphilitic. In tuberculosis, we can remove fluid from a joint and inject it into a guinea pig. If the guinea pig has tuberculosis, then the joint is proven to be tuberculous. If the guinea pig is healthy, the joint was not tuberculous. If we remove a piece of tissue from a tuberculous joint, and find characteristic tubercles in it, we say that it is a tuberculous joint. We cannot do that with a syphilitic joint. The best we can do is to say, "This may be syphilis." We have no infallible guide. As a rule, the spirochaete are not to be demonstrated. The only rules that we can say we possess are always to be on the lookout for syphilis when we find a slow inflammation in a joint; always to be on the lookout for it when we find a rapid inflammation in the joint; never to lose it from our minds, to remember that in its florid stage, the joint may be swollen and the bone rarefied, that cartilage may be eroded at its margin, perhaps eaten out in its center. It is all more or less vague. The vagueness disappears when the arthritis clears up under syphilitic treatment. The vagueness comes in its confusion with the other diseases, and the vagueness disappears if the disease clears up under antisyphilitic treatment.

Discussion.

Dr. Milton: Dr. Ely has left little else to be said on the subject. You will have to remember in treating joints that joints are subject to syphilis, and in large clinics where this subject is gone into pretty thoroughly, it is found that a large percentage of the joints are syphilitic, as high as eight per cent. in some clinics. So we have to remember that the thing is about us, it is with us.

Years ago when I went to college, they used to tell us that syphilis and tuberculosis were incompatible; if you got one, you could not get another, and vice versa. We know now that it is not so. Now, we have to remember that joints can be syphilitic, and we have to be on the lookout for it.

Dr. Buteau: This is too good a paper to let go undiscussed. If it is not more discussed, it is simply because Dr. Ely has thoroughly covered the subject, and because we recognize his experience and feel a little timid in bringing forth any arguments that might possibly suggest themselves to us.

I remember many times when I have had opportunity of visiting some of the larger clinics in the East that I would come back again and again, and say, "Well, they do not have the kind of cases back there that we have here—at least, the kind of cases that I have. My bad cases seem to be worse than any of the cases I see in some of the bigger clinics that are handled by masters in our profession." After a time, I began to realize that it was the way they handled their cases. They did not seem so serious because of the intelligent way in which they were approached. The operations that were awful to me were simplified often and made easy by these master men because they arranged their field so neatly. The rest of the work was readily done. And I was impressed here to-night by the way the Doctor approached his subject and the concise manner in which he presented and simplified it, and to my mind made it appear that these joint troubles were not such complicated cases to master after all.

There is only one question I would like to ask: Dr. Ely has mentioned six different kinds of troubles or affections with which syphilis of the joints might be complicated or confused in making a diagnosis. I wonder if we might not add malignancy. I know that is more rapid in its development of symptoms and yet in my experience again and again have I called it into question in making the diagnosis.

Also another question I would like to ask the Doctor: "Would it not be well at times to assume the diagnosis to be tuberculosis instead of syphilis and possibly to put the joint at rest and note the results of that treatment, as well as to assume that it was syphilis and put the patients under the treatment of antisyphilitic remedies?"

Dr. Ely: Dr. Buteau's remarks are well taken. Malignancy is very frequent at the end of the bone and is difficult to distinguish from syphilis. As a rule, a malignant disease does not involve the joint. There are joints that are so typically tuberculosis that you will immobilize them and will not give antisyphilitic treatment. That is correct, and yet, if you do that, always be on the lookout to prove that you were wrong. Always look for bony thickening, for an enlarged spleen, for something that may suggest syphilis. All these diseases are liable to secondary infection. Tuberculosis, especially, runs its regular course. If proper treatment is not administered or in spite of proper treatment, the diseased area may break down and a secondary infection may be added to it. If a secondary infection be added, the diagnosis is easy. As a rule, the sinus in typical, but do not think that you can make an invariable diagnosis from the appearance of the sinus. This is another error that we have just struggled out of after many years. Very often there is the typical pale, flabby look of a tuberculosis sinus. A gonorrheal joint, as you know, may at any time become secondarily infected; so may a typhoid joint, a pneumococcus joint. Some are more liable to secondary infection than others.

What I have given you is not only the result of laboratory work, but it is a struggling out of a confusion, a graduation from an idea that especial acumen could be cultivated to diagnose these joints. We used to be taught that they were perfectly simple. If a patient was brought in with a chronic inflammation of a joint, it was assumed to be tuberculous. There was practically no discussion. It was put in plaster of paris, and it went on in its treatment for years. I would make a diagnosis of tuberculosis or gonorrhea or syphilis. Sometimes I would strike it right and sometimes I would strike it wrong, and then I was crestfallen. I thought it was my own stupidity. At Roosevelt Hospital, where we had quite an active clinical service and quite a friendly rivalry, when anything interesting like that came along, each man would make his diagnosis and would bet on it, and the youngest man in the clinic would be just as liable to upset the oldest as the oldest to upset the youngest. It seemed to be a mere matter of chance. Then I set to work with these joints that had been removed and I put them under the microscope. I collected their histories, found out the diagnoses that had been made upon them by various men, the operations that had been done by various men, and I found that about one-third of them had been erroneously diagnosed. In the vast majority of instances, perhaps one man showed a little better average than the others. Those joints included the work of some of the biggest men at that time in New York, some of them were my own joints. From that it soon became evident to me that the diagnosis could not be made on the usual lines. Then from that and a study of the pathology of joint tuberculosis, it dawned on me how the diagnosis should be made. It was not to be made by any general appearance of the bone, not by any particular, you might say general, appearance of the synovial membrane, not by any particular appearance of the marrow in gross. Submit a piece of a joint to a pathologist. He will look at these various tissues, and if he find a tubercle in the synovial membrane or in the marrow, he will say that it is tuberculosis. If he do not find a tubercle, he will call it chronic inflammation—non-tuberculous. The features of both are the same, and the only point that microscopy did for the diagnosis was to say "chronic inflammation," tuberculous, or non-tuberculous. If a man cannot make it in the clinic from an inspection of the joint, and the pathologist cannot make it except from the presence or absence of the tubercle, how can we make it? From the X-ray? Well, take your X-rays. Take the best men in X-ray diagnosis. Have them put their diagnoses down, have them follow their cases along. You will find the X-ray man cannot do it. The X-ray features are all the same. History? The man who will go deepest in the history will guess right more often. If he pulls up the patient's trousers, finds the knee swollen, and says chronic rheumatism from the appearance of the joint, he will miss it most often. Let him sit down and enquire into the patient's health—how many times he has had a Neisser infection; if he ever had syphilis; if he ever had pneumonia, typhoid fever; how many joints were involved and in what order; did the disease come on suddenly or slowly? Let him ask, "Are your parents alive?" "What is your occupation?" The deeper one goes into the history, the more often one will guess right. A thorough physical examination must be added, and the usual laboratory tests. Then one is in a position to guess right in the majority of instances. If one will then on top of hard thorough work and careful examination of his patient, recognize the fact that one cannot make a positive diagnosis, and if one will keep one's eye open to the possibilities of error, one will do as well as is possible.

THE TONSILS AS A FOCUS ON INFECTION.*

By JOHN MACKENZIE BROWN, M. D., Los Angeles, Cal.

It has long been recognized that the tonsil plays an important role along with many other structures of the body, as a possible site of focal infection. But it has been only during the past decade that sufficient emphasis has been laid on the relative importance of the tonsil in comparison with other focal lesions in the production of morbid processes in other locations, and general systemic diseases. The work of such men as P. K. Brown, Billings, Shaumbaugh, Rosenow and others, has demonstrated conclusively that many pathological conditions of obscure origin are due either directly, or indirectly, to bacterial or toxic absorption from pre-existing or active processes in the tonsil.

The question naturally arises, why are the tonsils so closely related to systemic infection? It is because they are probably the most often infected of any of the possible sites where pathogenic organisms may be harbored. And this susceptibility to infection appears to be mainly due to their anatomical structure and position.

The tonsil, situated as it is near the commencement of the alimentary tract, is surrounded at all times by a flora of both pathogenic and non-pathogenic germs of the mouth. The crypts pass deeply

* Read before the annual meeting of the California State Medical Society, Fresno, Cal., April 20th, 1916.